

## ADHESION OF FLUIDS IN PIPES AND DRAINS.

In your paper of December 11, "An Old Practitioner" beautifully illustrates the drain-pipe logic of a very large class. He shows the difficulty of raising water 82 feet at the end of 2½ miles of piping; and then adds, "from long experience in these matters, I would never lay a drain that was likely at any time to be more than one-third filled." It is as much as to say, "because water cannot be forced up a pipe, therefore water cannot flow down a pipe;" and this is a very common blunder in drainage affairs. The rule applicable to water service, where the gravitation as well as the friction of water has to be overcome by force, are applied by too many to drainage, where the greater the weight of the water is, the better will the action be. The "Old Practitioner" has probably often seen a labourer hoisting a heavy basketful of bricks to the top of a scaffold by tugging at a rope which passed over a pulley. Did he ever say to himself, after noticing the hard work of the labourer, "From long experience in these matters, I would never use a basket; to bring down bricks in that way, that was more than one-third filled?" And if he did not say so, why did he not? Does he know that if water be forced up a pipe, the pipe must be choked full as high as the water rises? Does he know that if water be allowed to flow down a pipe, though the pipe may be choked full at the top, it must be less than full at the outlet? Does he know what the loss of force is when water is driven through a 9-inch main "from a larger main, and still farther back from a larger main still?" Does he know how much more rapidly water flowing down a pipe flows as it goes lower down?

A man who writes of his "long experience in these matters" may find that he has something to learn, after all, which the "Old Practitioner" seems not to have learned, seeing that he considers "the attraction of the pipes" in water-service matters to be his guide, or warning, in drainage matters. His is like the logic of the old poulterer,—"The Ruff is one of the foolishest birds that is; for, you may see a thousand ruffs together and no two of them alike."

N. R.

## NOTES IN THE PROVINCES.

**Ely.**—The east wing to the present almshouses, situated in St. Mary's-street, has just been completed, now forming the square, according to the design as originally laid down by the late Mr. Basevi, of London, making a handsome appearance, and quite an ornament to this part of the city. The stone used is from the Casterton Quarries, near Stamford. The work has been carried out by Mr. Freeman.

**Chettisham, near Ely.**—The church in this hamlet has been restored under the last-named architect, by putting on new roofs, and rebuilding porch and vestry: the interior has been fitted up with open seats and stalls.

**Wallington, Oxon.**—On Monday before last, a house, occupied by Mr. Bushy, of Summerstown, fell in. The foundation seems to have been undermined by water, accumulated in the cellars through the late excessive rains.

**Bridgewater.**—Efforts are being made to stop interments in the churchyards of St. Mary's and Trinity. Complaints are made of the design and character of some of the grave-stones and inscriptions, which it is thought the clergy ought to see to and regulate.

**Plymouth.**—The embankment across Mill-bay, for the Great Western Docks, is nearly completed. The entrance of twelve feet will be closed in February next, and 2,000 to 3,000 men set to the interior works. An engine capable of clearing a ton of water a minute is to be erected.

**Brecon.**—A model of the proposed Wellington memorial for this town has been exhibited by the sculptor, Mr. J. Evan Thomas. The statue will be cast in bronze, and will be 8 feet high, with pedestal of Portland stone and bronze panels, with alto-relieues of General Picton and the Duke, Captain Davies of Brecon, &c. The total height of the monument will be 18 feet. The site will be the

centre of the Bulwark in front of St. Mary's Church.

**Handsworth.**—The first stone of a new church at Sobo was laid on Wednesday in last week by the Earl of Dartmouth. The new building is in the Decorated style, and cruciform in plan. The nave will be 97 feet 6 inches in length by 23 feet 2 inches in breadth, with proportional transepts and aisles; the chancel 36 feet by 20 feet 4 inches. The tower and spire are 170 feet high. The church will accommodate 1,000 persons—540 free. The cost, exclusive of spire, will be 3,950*l*.

**Southport.**—An hospital for 160 patients is about to be erected here, at a cost of 5,000*l*. The land, given by Mr. C. Scarisbrick, is said to be worth 600*l*.

**Edinburgh.**—An excellent clause in the Water Companies' Act of 1847, compelling the company to erect a number of additional public fountains in the most necessitous parts of the city, and of Leith and Portobello, is now being carried out, according to the Act, under the direction, as to localities, of Mr. Matheson, the resident architect of the Board of Works. To the city, twenty-three wells have been appropriated; to Leith, five; and to Portobello, two. They are in the form of small metal pedestals, so as to occupy little space in the narrow, confined, and crowded closes and courts in which they are chiefly distributed.

**Dundee.**—The free church of St. Paul, Nethergate, was opened on Sunday week. It is seated for 950 persons.

**Elgin.**—Contracts have been entered into for extensive additions and alterations at the Commercial Bank-buildings here. The whole front of the building is to be renewed with polished freestone from the hospital quarry. The style chosen is Romanesque. The design was furnished by Messrs. Mackenzie and Matthews, architects. The contractors are—for the mason work, Mr. John Lamb, builder; carpenter, Mr. James McBeth; plasterer, Joseph Stuart; plumber, Blaikie and Co.; painter, glazing, and papering, A. Asher; and slater, James Dession.

**Garston.**—This little shrimping village on the Mersey is about to be converted into a port by the opening of its new dock and railway. The western wall of the dock is nearly complete. The bed of the dock is already sunk to the required depth. The fact of this vast dock, of 6 acres in extent, having been constructed out of the solid rock, has rendered the work one of time and labour. As a compensation for these, the bed of the dock has produced the materials for the erection of its own walls. Immense blocks of stone are squared and dressed on the spot where they have been deposited from the effects of the blasting which dislodged them from their primitive position; and, being hoisted by means of travelling cranes, are at once disposed of as building material. In this way the entire walls have been built, obviating the necessity of purchasing and transporting stone. The smaller fragments, not suitable for the walls, are conveyed, by means of an inclined tram-road, to the surface, and will be employed in the erection of workshops and other requisite buildings. The large dock-gates—most ponderous specimens of carpentry—are hung, and only await the destruction of the temporary sea-wall to admit the element destined to convert the village into a port. The St. Helen's railway, in connection with the dock, has been for some time open, and is to be extended to Warrington. An immense pile of warehouses is to be built on the south side of the dock.

**Beetham.**—In the church of Beetham, near Ulverstone, a south window has been filled with stained glass. The window consists of two openings, containing a single figure in each. The eastern light contains the figure of our Lord. The western light contains the figure of Moses. The design is thus typical of the Old and New Testaments. The window has been designed and executed by Mr. F. Burrow, of Milnthorpe.

A NEW MUSIC HALL, IN LONDON, is to be erected for the New Philharmonic Society, in time for the season of 1854.

## PANORAMA AND DIORAMA.

**Burford's Panorama.**—Mr. Burford, assisted by Mr. Selous, has produced, in his smaller gallery, a beautiful picture of a beautiful country, the Bernese Alps, from the Faulhorn Mountain. It is a remarkable view, compounded of mountains, valleys, rocks, and lakes, and has been treated with great skill. Sketches for it were made on the spot by Mr. Burford in the autumn of last year, and its truthfulness may be depended on.

**The Wellington Campaigns.**—The proprietors of the Gallery of Illustration, in Regent-street, added some time ago to their popular diorama, views of Walmer Castle and the Duke's Chamber, the latter a picture of touching simplicity. On Monday they presented for the first time the Lying in State, the Funeral Procession, and the Interior of St. Paul's—a very effective and fine representation. The View of the Procession is taken from Charing-cross, and gives a fair idea of the scene. The Diorama, as a whole, is instructive and beautiful.

## SOCIETY OF ARTS' SOIREE.

THE first evening meeting of the Society of Arts was held on the 22nd inst. when the rooms were crowded with visitors, and the walls covered with a very remarkable collection of photographs, French and English, gathered from various sources. Mr. Roger Fenton read some interesting general observations,—"On the present position and future prospects of Photography," in the course of which he pointed out the obstacles in the way of progress, the important purposes to which the art may be applied, and glanced at the data which are necessary for the more rapid development of photographic knowledge. He asked,—Is it yet ascertained what is the agent which produces the change in the salts of silver, from which the sun picture results? Is it light alone, or some agent accompanying, yet distinct from the rays of light? If it be light alone, what are the causes which render its action so unequal at different seasons of the year, and at different times of the day? What is the effect of the extreme heat and cold in hastening or retarding photographic action? What influence is exercised by the electrical state of the atmosphere?

Lord Montagu was in the chair. The collection of photographs will be exhibited for a week. The exhibition of inventions now open here well deserves a visit.

The Society has an active officer in their new assistant secretary, Mr. James Forest.

## THE SCREW PROPELLER.\*

WHILE noticing Lieutenant Jervis's book, "Field Operations," some time ago, we had occasion to remark that it would have been befitted the mistress of the main,—in place of a militia agitation, which implied a sort of foregone conclusion that invasion, *a priori*, was not only possible, but irresistible,—had her talk in such a case turned mainly on naval tactics, channel fleets, marine regattas, cruising war-yachts, getting up the steam, and what not. Now Britannia appears at length to have opened her eyes to the propriety of such a view of the right policy whereby to awe her enemies, and keep them friends, if not to

"Frustrate their knavish tricks."

And we are pleased to observe that amongst other repairs to our good old wooden walls, we are to have a whole fleet of screws; and our opposite neighbours may depend on it, that should "Greek meet Greek" in any other "tug" than that of friendly rivalry in art and science, they will not have many opportunities of seeing these screws so long as they work astern, unless, indeed, they be engaged to "p" French vessels into British ports. It is rather an odd idea of our lively and sanguine neighbours that their increasing steam-fleet must necessarily diminish Britain's rule over the main, as if the latter could not very shantly restore the balance of forces, as, indeed, she is already about to do.

\* A Treatise on the Screw Propeller; with various Suggestions of Improvement. By John Bourne, C.E. London: Longman and Co. 1852.